

# 8.0 - A City in Balance with Nature

## 8.1 - Introduction



People in the City of Grand Rapids support planning approaches that protect natural resources, capitalize on existing infrastructure and honor the principles of Smart Growth. This chapter highlights Plan recommendations that provide an alternative to sprawl, promote balanced transportation, protect valued natural resources and better manage stormwater runoff.



## How Should the City Promote Sustainability?

The citizens of Grand Rapids expressed the following beliefs concerning how the city should consider the interests of nature and the environment.

- It is important to support the advancement of green technology in the city.
- We believe that everything is interconnected.
- Preservation should be balanced with reuse.
- We should follow guiding principles that are based on sustainable development and Smart Growth.
- The Grand River and its watershed must be enhanced and protected.
- Green spaces should be interconnected to accommodate wildlife.
- The production of biosolids and other forms of waste should be minimized.
- The quality of our air can be improved by placing a greater emphasis on mass transit.
- Balance is essential in mass transit, auto and truck use.
- Grand Rapids should be the “shining star”; an international leader in environmental problem solving.

Sustainable development is an emerging trend that will affect land use patterns, construction techniques and development in the future. Green buildings, roof-top gardens, rain gardens and new technologies will influence the management of stormwater and strive to resolve many man-made problems. Some of these changes will be mandated by law, (for example the separation of combined sewers; stormwater and sanitary) and increasing pressures to improve water and regional air quality may result in more transit-supportive initiatives, regional watershed protection and waste reduction initiatives. In recognition of the challenges ahead, the Master Plan Committee adopted the Hannover Principles as aspirational goals in formulating their guiding principles for this Master Plan (see Page 103).




At the fourth Community Forum more than 150 people came together to discuss the future of Grand Rapids.

## 8.2 - Visions

One of the first steps of the master plan process was to ask the citizens of Grand Rapids what they would like to see the city look like twenty years from now. At the first community forum more than 300 people came together to discuss the future of Grand Rapids. Their discussion was guided by the information gathered during a series of neighborhood and business association meetings and discussion guide responses collected in the first two months of the planning process. Eleven major categories summarized key issues and provided participants a variety of discussion topics from which to choose. The beliefs and issues used at the forum were developed from the strengths, weaknesses, opportunities and threats identified previously. Statements and images that described a vision, or preferred future, for Grand Rapids were then created by forum participants in small groups. The following visions emerged.

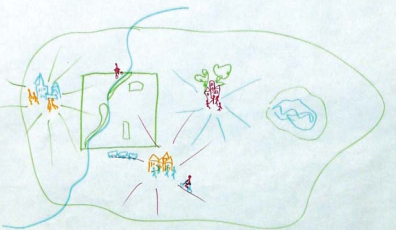
### 8.2.1 - City As Center

Grand Rapids and the metropolitan region will be national leaders in controlling urban sprawl. As a result, we will succeed in revitalizing the city's central core, strengthening long-established neighborhoods and protecting treasured green spaces. The quality of our neighborhood-based businesses, workplaces and schools will play an important role in maintaining our city's appeal to families, employers and investors.

 **Topic:** Sustainable Enviro Design  
**Issue:** Urban Sprawl

GR is a shining star. It has reversed urban sprawl by revitalizing its central core, strengthening its long-established neighborhoods and preserving its green spaces. Families + businesses are attracted to GR because of neighborhood-based businesses, workplaces, + schools, which are renowned for their quality. It's people-friendly transportation network, support for alternative energy, multi-use of churches + other community buildings make it a diverse, sustainable city. No generations to come.

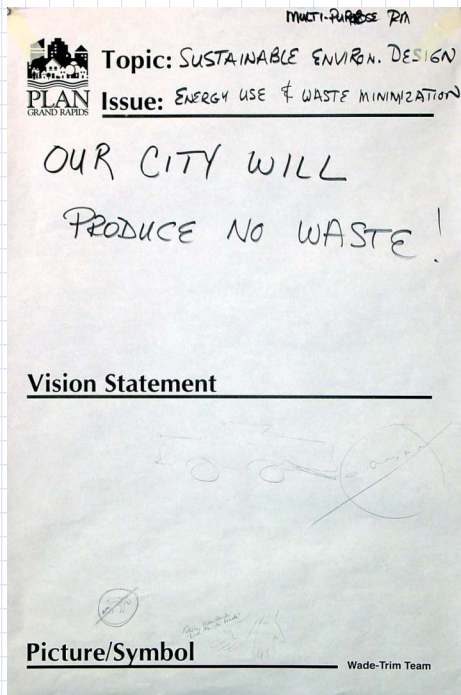
**Vision Statement**



**Picture/Symbol** Wade-Trim Team

Posters are from the first Master Plan Community Forum held at Central High School in March 2001.





## 8.2.2 - Sustainability

We will be a sustainable city because of our balanced approach to transportation, our support for waste reduction, our reinvestment in developed areas and the diversity of our economy. Our transportation policies will pay dividends in improving air quality and our state-of-the-art stormwater management practices will reduce run-off volumes and improve water quality. We will also foster a culture that educates the community to the benefits of waste reduction and recycling and support the programs needed to move towards the goal of producing no waste. Grand Rapids will be nationally known as an environmental leader. We will be proud of our progress in promoting harmony between humanity and the built and natural environments.



## The Hannover Principles

After being selected to host the 2000 World's Fair on the theme of "Humanity, Nature, and Technology," the City of Hannover, Germany commissioned William McDonough to develop a set of guiding design principles for the event. McDonough sought to inform the international design community of the issues inherent to sustainable design.

Officially announced by Mr. McDonough at the 1992 Earth Summit in Rio de Janeiro, the Hannover Principles offered one of the first comprehensive statements on sustainability and the built environment. Today they remain a fundamental primer in the philosophy and practice of sustainable design. Widely recognized as a seminal expression on environmentally intelligent design, the Principles have inspired and influenced a wide array of other works and documents.

Like the Master Plan, that serves as a general guide for future development of the city, the Hannover Principles address broad issues relative to sustainable design rather than a detailed checklist for green construction practices. The Hannover Principles should be seen as a living document committed to the transformation and growth in the understanding of our interdependence with nature, so that they may adapt as our knowledge of the world evolves.

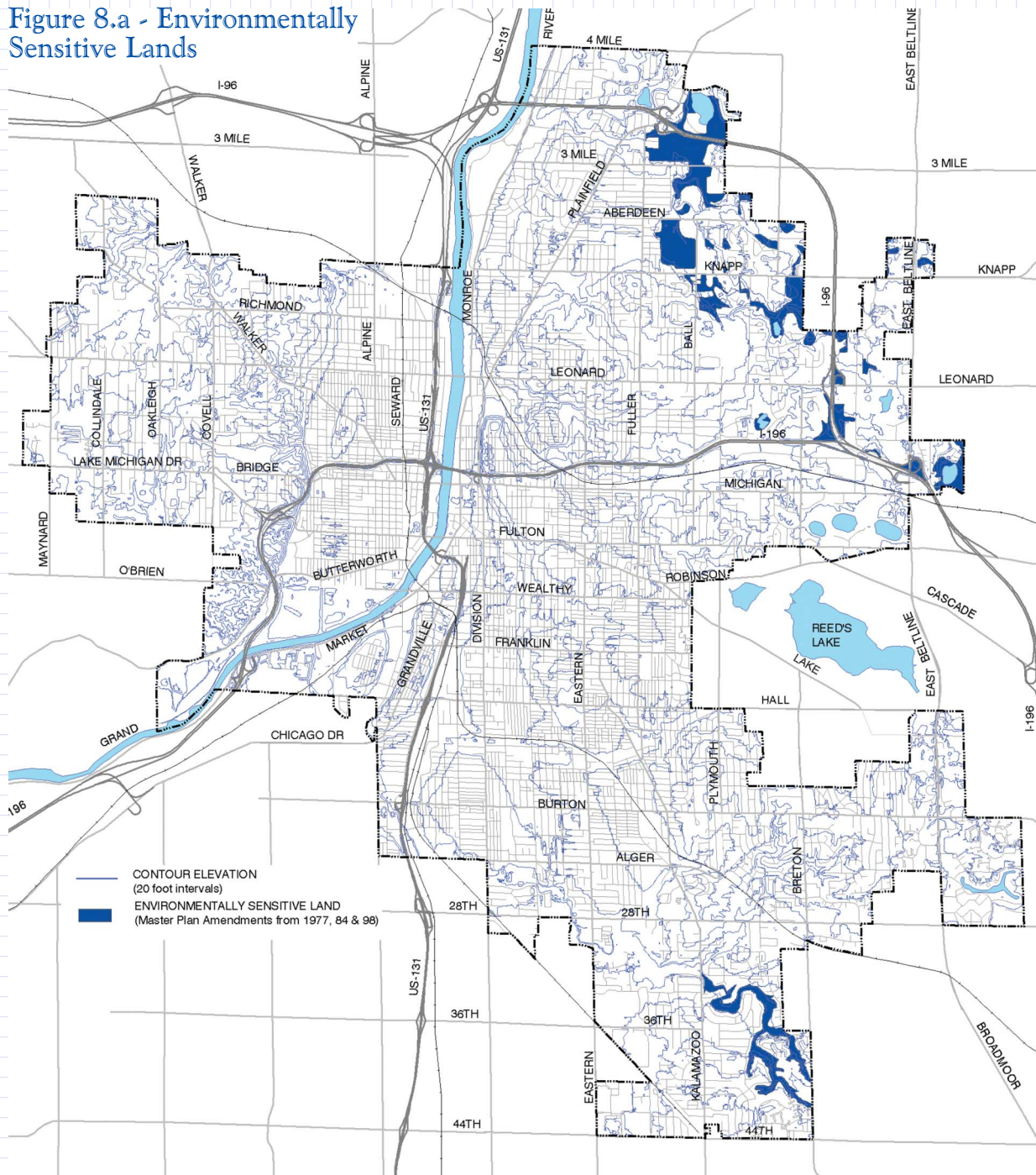
The Master Plan Committee reviewed the Hannover Principles as a part of their background research on preparing a master plan. While not adopted as a part of the

Master Plan for Grand Rapids, the committee endorses the concepts embodied by the Hannover Principles:

- 1. Insist on rights of humanity and nature to co-exist** in a healthy, supportive, diverse and sustainable condition.
- 2. Recognize interdependence.** The elements of human design interact with and depend upon the natural world, with broad and diverse implications at every scale. Expand design considerations to recognizing even distant effects.
- 3. Respect relationships between spirit and matter.** Consider all aspects of human settlement including community, dwelling, industry and trade in terms of existing and evolving connections between spiritual and material consciousness.
- 4. Accept responsibility for the consequences of design** decisions upon human well-being, the viability of natural systems and their right to co-exist.
- 5. Create safe objects of long-term value.** Do not burden future generations with requirements for maintenance or vigilant administration of potential danger due to the careless creation of products, processes or standards.
- 6. Eliminate the concept of waste.** Evaluate and optimize the full life-cycle of products and processes, to approach the state of natural systems, in which there is no waste.
- 7. Rely on natural energy flows.** Human designs should, like the living world, derive their creative forces from perpetual solar income. Incorporate this energy efficiently and safely for responsible use.
- 8. Understand the limitations of design.** No human creation lasts forever and design does not solve all problems. Those who create and plan should practice humility in the face of nature. Treat nature as a model and mentor, not as an inconvenience to be evaded or controlled.
- 9. Seek constant improvement by the sharing of knowledge.** Encourage direct and open communication between colleagues, patrons, manufacturers and users to link long term sustainable considerations with ethical responsibility, and re-establish the integral relationship between natural processes and human activity.



Figure 8.a - Environmentally Sensitive Lands



## 8.3 - Plan Recommendations

To provide a basis for achieving these visions, plan recommendations focus on sustainable development patterns and stormwater management use.

### 8.3.1 - An Alternative to Sprawl

The preceding chapters have presented visions, plan recommendations, objectives and policies that can make Grand Rapids a more competitive alternative to greenfield development for many households and businesses in the metropolitan region (See Chapter 3 - *Great Neighborhoods* - Page 27, Chapter 4 - *Vital Business Districts* - Page 47 and Chapter 5 - *A Strong Economy* - Page 63). By encouraging reinvestment in already developed areas within the city's boundaries and by retaining and attracting more residents, businesses and jobs, Grand Rapids can lead the way to a more sustainable regional growth pattern. Nevertheless, significant cooperation among all of the units of government within the region, and the private sector, will be required to reduce development pressures on farmland, critical natural areas and open space. Grand Valley Metropolitan Council's 1994 *Blueprint Report* provides an initial agenda for modifying current (business as usual) development patterns to manage growth in a more sustainable way. This Master Plan supports and implements that agenda.

### 8.3.2 - Automobile Alternatives

Providing transportation choices to reduce auto dependence and encourage transit use, walking and cycling will also contribute directly to sustainable development and help to improve environmental quality in a number of ways (see Chapter 6 - *Balanced Transportation* - Page 75). For example, a shift from



single-occupancy vehicle commuting to other modes of transportation will reduce the consumption of nonrenewable resources and improve air quality by reducing tail pipe emissions. In addition, reduced auto dependence will reduce the need for parking at multiple destinations; less paved area for parking can reduce the quantity, and improve the quality, of stormwater runoff.

### 8.3.3 - Natural Resource Areas

Today, Grand Rapids has no comprehensive inventory of natural resource areas (for example, wetlands, wooded areas, steep slopes, valuable habitat) that should be protected. Such an inventory is needed to help guide decisions on open space acquisition and to promote site planning that protects sensitive natural features (for example, through clustered development). The Master Plan recommends that a citywide inventory of natural resource areas be developed and maintained. The *Northeast Master Plan Amendment* provides an example of the value of developing an inventory of sensitive lands in making future land use and development decisions (*Figure 8.a - Environmentally Sensitive Lands Map - Page 106*).

In addition, the primary open space framework (see *Chapter 7 - A City that Enriches Our Lives - Page 89*) recommends that the environmental and recreational value of the Grand River and its tributaries be protected and celebrated by making them the focus of a greenway system. This proposed system of connected riparian corridors can enhance the functioning of the river ecosystem, as well as the community's understanding of it.

### 8.3.4 - Stormwater Management

Stormwater management, and its impact on water quality and flood risk, has been a significant issue in

Grand Rapids. Substantial investments have been made (and more are anticipated) in separating combined sewers, providing stormwater storage capacity and developing standards for minimizing and managing stormwater on individual development sites. Some of the challenges for the future will be to explore the topics listed below.

- Opportunities for undertaking collaborative stormwater management initiatives on a watershed (and sub-watershed) basis, involving all governmental units within the region.
- Implementing natural infiltration alternatives to putting stormwater runoff in a pipe including, for example, “rain gardens,” permeable paving and other runoff infiltration approaches.
- Joint planning of stormwater detention areas and parks to capitalize on the potential to create facilities that meet recreational, stormwater management and environmental goals.

To meet these challenges, it will be necessary for governments within the region – and city departments – to work together. It is recommended that a “toolbox” of stormwater management alternatives be developed as a follow up to the revised Stormwater Ordinance.

Taking advantage of natural processes to store and treat stormwater, and reducing stormwater flows into sewers can save public infrastructure dollars, while at the same time providing environmental and quality of life benefits. Using natural infiltration recharges ground water to moderate stream flows, support vegetation and provide habitat. Decreasing paved surfaces and increasing tree plantings help to moderate urban temperatures. Revegetation also helps to beautify neighborhoods. A variety of techniques for restoring watershed functions in urban neighborhoods are presented in the adjoining sidebar.

## Techniques for Restoring Watershed Functions in Urban Neighborhoods

**Reuse of Rainwater** - Capturing roof runoff in tanks and cisterns allows it to be used for lawn and garden irrigation; reduces peak flows during storms and provides for infiltration into the soil in dry weather.

**Green Roofs** - A modern variant on sod roofs, green roofs capture a portion of rainwater and replace some of the functions of vegetation displaced by buildings.

**Disconnection of Roof Drains** - Disconnecting down spouts from sewers and discharging into rain gardens, dry wells or vegetated swales reconnects rainwater with native soil (for infiltration) and vegetation (for absorption).

**Disconnection of Permanent Drainage** - Pitching the drainage of driveways, sidewalks and parking lots onto adjacent vegetated soil (and not onto other pavement or storm sewers) also increases infiltration and absorption.

**Infiltration Basins** - Carefully engineered depressions in the landscape (for example, rain gardens, dry wells and subsurface recharge beds) collect runoff from roofs and pavement and allow it to percolate into the soil.

**Tree Plantings** - Tree branches and foliage intercept a portion of rain water.

**Reduction of Impervious Surfaces** - Reconfiguring driveways, parking lots and streets to reduce unnecessary pavement allows more vegetated soil and more infiltration.

**Porous Pavement** - Special varieties of asphalt, concrete, masonry and other materials have open pores that detain runoff, filter pollutants and allow water to infiltrate the underlying soil.

**Vegetated Swales** - Landscaped drainage channels (as an alternative to pipes) slow runoff, remove pollutants and infiltrate water.

**Daylighting** - Restoring or replacing historic streams by creating naturalized open channels that slow runoff and bring it into contact with soil, vegetation and air to allow the natural ecosystem to treat and infiltrate stormwater.

*Adapted from Stormwater, July/August 2001.*





Photo courtesy of ArtWorks Expanded Visions 2001 youth apprenticeship program.

## 8.4 Objectives and Policies

The following objectives and policies summarize what needs to be done to achieve the visions and plan recommendations on the preceding pages so that Grand Rapids can be a city in balance with nature. Above each objective is a line of theme icons. The icons illustrate how a particular objective is interrelated with another Master Plan theme. See Page 24 for a description of each theme.



### Objective N 1

**Ensure that Grand Rapids remains the focal point of West Michigan in order to reduce urban sprawl.**

- Work continuously to maintain the city's appeal as an investment location for households, business, industry and institutions.
- Identify the proportion of metropolitan population growth the city desires to capture and work to absorb that population in developed areas.
- Work in partnership with non-profit organizations to educate the public about sustainable development and management practices.



### Objective N 2

**Encourage infill development and brownfield clean up and reuse.**

- Direct development and investment toward infill and reuse of previously developed sites.
- Clean up contaminated sites.



### Objective N 3

**Identify and preserve (and restore, where appropriate) sensitive environmental resources and valued natural areas.**

- Prepare a citywide inventory of environmentally sensitive lands including, for example, wooded areas, wetlands, steep slopes, wildlife habitat and riparian corridors.
- Encourage more compact and clustered development patterns to conserve open space and natural features, promote watershed protection and reduce development costs.

- Adopt development standards that encourage the protection of natural features.
- Within the region, work towards the preservation of large patches of high quality natural areas and wildlife habitat within interconnecting wildlife corridors.



### Objective N 4

**Reduce stormwater runoff and improve water quality by increasing natural infiltration.**

- Use the proposed greenway system as part of a comprehensive strategy for protecting the quality of stream and river corridors; maintain open space buffers to reduce the water quality impacts of stormwater runoff and provide opportunities for visual and recreational public access.
- Promote the use of best management practices to promote natural infiltration in public and private development.
- Consider new paving technologies to reduce imperviousness and runoff volumes.
- Wherever possible, provide stormwater retention and treatment for parking area runoff integrated with required landscaping.



### Objective N 5

**Reduce waste.**

- Expand efforts to educate the community to the benefits of waste reduction and recycling; recognize and reward waste reduction achievements.

